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cattle and is certainly but little travelled, the query arises, as to where these insects find a sufficiency of their necessary food.

Oniticellus cubiensis *Duval*. Some years since I received a single specimen of this insect, from the late H. K. Morrison, collected by him in Key West, Florida. This species, common in the West Indies, has probably obtained a foot-hold in Southern Florida and should be added to our list. The specimen mentioned above is now in Dr. Horn's cabinet.

SOME INJURIOUS INSECTS OF THE ORCHARD AND GARDEN.

BY MARY TREAT, VINELAND, N. J.

Insects are everywhere and their food is almost everything that one can think of in the world. But those who try to grow fruits and flowers are more interested in the pernicious creatures that live in our orchards and gardens. In the orchard no part of a tree is exempt from the attacks of the numerous and various insects whose existence depends in a great measure upon our labor in making the trees grow to support them. We find them feeding upon the bark, others eating into the solid wood, and some live upon the leaves and twigs, which they devour entire, while others live upon the fruit and flowers, and dainty ones eat only the parenchyma, leaving the skeleton of the leaf intact, and still more tiny ones find ample room for homes between the epidermis of the leaf when they mine and make intricate roads in every direction. In the garden, also, are untold numbers feeding upon our small fruits and vegetables. The currant borer eats the pith of the stems of our currant bushes, while the currant worm strips the leaves from both gooseberry and currant bushes, and borers attack our blackberries and raspberries. In fact, everything that we attempt to grow is hedged about with foes. In this brief article I can mention only a few of the most destructive that come under my own observation in our home grounds.

Every few years particular kinds of insects will be very abundant, and then for a time partly subside. Just now we are having an unusual visitation of the round-headed apple tree borer. (*Saperda bivittata*.) It threatens to kill our trees in spite of all our

efforts to save them. It is not unusual to find from ten to a dozen of these borers in a single tree. Young trees have been completely girdled and killed. It has been said that this borer confines itself to the base of the tree, and occasionally in the crotch. Last summer and autumn we not only found them in the base and crotch, but many were at work in the trunk anywhere between the crotch and base, and in some instances we found them well up in the tree in the larger branches. The parent of this borer is quite a handsome beetle, about an inch in length, with two longitudinal white stripes alternating with three light-brown ones. But it is seldom seen in the day-time unless one knows its haunts and unearths it and brings it to the light.

The only natural enemies that I have observed trying to get these borers are the Downy woodpecker and the great Golden-winged woodpecker, and neither of these birds, as far as I have seen, have learned to work at the base of the tree where they are most abundant, but in the crotch or in a branch they will work until they get them. If frightened away they soon return. The Golden-winged builds its nest in our orchards if he can find a partly decayed tree, and becomes quite domesticated.

The apple-worm or codling moth (*Carpocapsa pomonella*) is one of the most destructive insects of the fruit. It is almost always present, but in the summer of 1891 for some reason there were none here, and we had beautiful smooth apples which kept until the following April, something heretofore almost unheard of in our locality. But we had only one year's respite; the past season they were with us as usual. The parent of the apple-worm is a small, brown moth, and it is double-brooded. The first brood cause the young apples to fall, and this thinning out of the superabundant fruit is an advantage rather than detriment. It is the second brood that works the immediate mischief, as now the apples are so far advanced that they do not fall, while the creature mines its way to the core, and many find their way out again and fall to the ground, when they almost invariably start for the trunk of the tree and conceal themselves beneath loose bits of bark, where they spin cocoons and remain in the larvæ state until spring, when they pass into the pupæ state and emerge as moths in early June.

A good many of these secreted worms are found and eaten by the Downy woodpecker and the Brown creeper, which are almost always in company, especially in the late autumn. The little creeper follows his larger companion closely, and often the woodpecker

breaks off bits of bark, leaving the cocoon and sometimes the worm fully exposed and passes on, and the creeper avails himself of his oversight. It looks almost as if the woodpecker purposely uncovered some of the worms for the creeper, as he leaves them fully in view, and goes on until he finds others which he will eat.

The tent caterpillar (*Clisiocampa americana*) is another annual visitant of our orchards, but these caterpillars are so easily managed that only the most careless fruit grower will allow them to mature.

Last season, as we were preparing for the annual raid upon these creatures, I noticed a Cuckoo was destroying one of the nests and filling its mouth with the young worms. The Cuckoo's nest was in one of the apple trees, so I stopped proceedings, and the pair of birds destroyed every nest.

The peach borer (*Ageria exitiosa*) is ever present, but this is of minor importance compared with the black peach aphid. In a mild winter we sometimes find the twigs of a tree completely covered with these insects. Such a tree is soon thereafter killed with the yellows—not from their visible work on the limbs, but from their attacks on the roots. How and when they enter the ground I do not know from practical observation, but I have pulled up young trees in late summer when the leaves had turned yellow and found the roots almost covered with lice when none could be seen above ground.

Root-lice are much more destructive than those on the stems and leaves, both to herbaceous as well as to woody plants. Last summer I noticed a native *Ampelopsis* looked sick, and the leaves began to fall in August. Heretofore it had been a strong, vigorous grower. Carefully removing the earth from the long roots which run near the surface, I found clusters of dun-colored lice thickly scattered all along the rootlets, causing little galls. As the *Ampelopsis* is closely related to the grape, may not these lice be related to the grape *Phylloxera*, of which Professor Riley has given us the life history?

The most effectual remedy which I have found for these underground pests is some disagreeable compound that was sent to me for a trial on the rose-bug. It had no effect on this nuisance, and as the odor was so annoying I had the box carried off some distance from the house, where it remained three years. I think the donor called it sludge—the refuse of kerosene, but I should think it was the refuse of everything disagreeable. However, after three years banishment I came across it and found the vile

smell had greatly evaporated, and concluded to give it a trial on plant lice. I dissolved a quantity in water and sprinkled it over infested plants, and it acted like a charm, soon killing all the aphides without injuring the plants. I then tried it on root-lice, and a marked beneficial effect was evident. Drooping herbaceous plants soon revived. A small Botan plum tree was badly infested at the roots. I saturated the ground around it with the mixture, and very soon the tree put on a healthy look.

But of all the insects which we have to combat the rose-bug (*Macrodactylus subspinosus*) is the most formidable. It overwhelms us with its numbers. In favored localities where this insect is unknown, the statement of its ravages would seem improbable.

They make their appearance toward the last of May, and remain with us about six weeks, devouring foliage, flowers and fruit. By Decoration Day they are in full working order, and their devastations in our cemeteries is almost past belief. Not only are all the flowering shrubs and plants swept clean, but also the beautiful designs and emblems woven by loving hands are wholly devoured before the sun disappears. About this time they also attack the grape-blossoms, all of which they take except those protected with paper bags. After the grape-blossoms are eaten and the roses and most of the other garden flowers are consumed, they swarm over the fruit trees. The apple seems to be their first choice; after this plums, cherries and peaches. As far as I have observed they do not eat pears.

Were it not for their social habits scarcely any fruit would be left. They cluster thickly over an apple which the first one happens to alight upon, and soon there is a great ball of clinging insects around it which only the center ones can reach. At this stage the stem is often eaten, and the mass falls to the ground, when they disperse, and we see nothing is left of the apple but the core. When they start for flight they do not rise as high as the tree from which they fell, but gradually rise higher as they fly until each strikes some plant, shrub or tree on which it alights as a nucleus for another.

I saved plums on small trees by often shaking them, when the beetles would drop to the ground and pass on to other things.

The only way to kill them is either by crushing or drowning in kerosene oil. I keep several pails partly filled with water and a good supply of kerosene in each, and set them near the plants I wish to save. Many times during the day the plants are visited

and the beetles thrown into the liquid. When it becomes thick with the pests more oil is poured in until all are killed. The pails at first were carried some distance and the contents emptied on the ground, but we soon found the odor emanating from them was undesirable, and was obliged to bury the creatures.

Early in July the females begin to burrow into the ground to deposit their eggs, and soon after their day is over for the season, and we begin to take pleasure in our roses and other plants in the flower garden.



NOTES ON SOME NORTH AMERICAN MOTHS,

BY CHARLES PALM.

Sphinx cupressi *Bdv.* Plate I, fig. 6.

The late Henry Edwards recorded the capture of two examples of this species, which were taken in Florida. One by Mrs. A. T. Slosson and the other by myself. Another specimen, a perfect male, has recently been sent to me by one of my correspondents from the same locality.

Arachnis zuni *Neum.* Plate I, fig. 2.

Described from New Mexico. The type is in Mr. Neumoegen's collection.

Hyparpax venus *Neum.* Plate I, fig. 4.

Described from Colorado. The types are in Mr. Neumoegen's collection.

Datana modesta *Beut.* Plate I, fig. 7.

This species was described from a single male taken by me at Kissimmee, Orange County, Fla. A fine example of the female has since been sent to me from the same locality. It differs slightly from the male by being a little more distinctly marked; the transverse band and the discal patch being quite distinct. Another small spot is present a little before this patch. Otherwise same as male. Expanse 55 mm.

Cerura nivea *Neum.* Plate I, fig. 8.

This was first described as a *Heterocampa* in the Canadian